



Fresno Asthmatic Children's Environment Study (*FACES*) UPDATE

Investigators

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Overall Research Goals of *FACES*

- **Title of Project:**
 - *Responses to Short-term Fluctuations in Particulate Air Pollution in Asthmatic Children: Implications for Asthma Natural History*
- **Overall research goals**
 - Identify characteristics of children who respond to day-to-day increases in ambient air pollutants, especially PM
 - Determine if children who respond have more severe asthma as they get older
 - Identify the important components of PM, gaseous pollutants and bioaerosols responsible for health effects

***FACES* is a Unique Study**

- This is the only study that specifically addresses the question of whether exposures to short-term increases in ambient air pollution result in long-term adverse outcomes in children with asthma
- **Key Areas of Focus for FACES**
 - Acute effects \equiv long-term effects
 - Focus on specific components of PM
 - Effects of outdoor and indoor exposures
 - Effects of bioaerosols
 - Oxidative and immunologic mechanisms

What *FACES* Has Accomplished Establishment and Follow-up of Cohort

- **Establish Fresno field office**
- **Hire and train field staff**
- **Recruit 210 children ages 6-11 yr with asthma**
 - **recruitment still in progress**
- **Carry out follow-up as specified by protocol**
- **Develop and implement all data collection and data management systems to obtain health data**
 - **establish QA/QC**
 - **up-to-date data entry**
- **Meet with Advisory Panel**

What *FACES* Has Accomplished

Establishment of Exposure Monitoring

- **Central Site Sampling**
 - Added daily measurements of metals, endotoxin, and bioaerosols
- **Home Intensive Sampling**
 - Implemented collection of detailed indoor and outdoor air quality data at 100 participant's homes during the health panels
- **Routine Home Sampling**
 - NO₂, ozone, ETS, and house dust in ~200 homes
- **School Sampling**
 - Two well-equipped mobile trailers collecting air quality data at schools (in collaboration with ARB staff)

What *FACES* Has Accomplished

Preliminary Work Data

- **Developed descriptive summary reports of cohort**
- **Developed asthma severity classification**
- **Submitted manuscript on lung function testing**
- **Presentation of talks at national meetings**
 - **Topics: asthma severity, moisture in homes, causal regression, exposure assessment, distance from roadways (ATS, ISEE, SER)**
- **Developed causal statistical models**
 - **initial analyses justify approach taken**
- **Preliminary analysis of proximity to roadways and lung function**
- **Obtained USEPA funding for two sub-studies**

What *FACES* Has Accomplished Exposure Data Being Collected

- **Known Asthma Triggers**
 - Ozone, SO₂, Nicotine
- **Mobile Source Indicators**
 - NO/NO₂, CO, EC/OC, PAHs
- **PM Indicators**
 - Mass, Sulfate, Nitrate, Metals, Particle Number & Size
- **Biological Agents**
 - Pollen Grains, Fungal Spores, Endotoxin, Dust Allergens

What *FACES* Has Accomplished

Exposure Data

- **Concurrent measurements of all the key pollutants that are likely to exacerbate asthma**
 - Bioaerosols + conventional air pollutants
- **Characterize Neighborhood-Scale Pollutant Variability**
 - Spatial Variability, Roadway Effects
 - Indoor / Outdoor Differences
 - Daily and Seasonal Variability
- **Characterize Home-Scale Pollutant Variability**
 - indoor/outdoor pollutant concentrations
 - house dust (endotoxin, allergens, molds/spores)
 - Environmental tobacco smoke

What are the Plans for *FACES*?

- **Finish recruitment of cohort**
- **Continue follow-up (exposure, health outcomes)**
- **Finalize overall health-exposure data base**
- **Interim analysis of health outcomes in relation to exposure**
- **Exposure modeling**
- **Definitive data analyses**
- **Submission of papers to peer-reviewed journals**
- **Submission of final report to ARB**